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reading information, including an identification information superimposed upon presentation target data, from a record medium;

extracting the identification information from the read information;

performing one of unscrambling and decrypting presentation target data using the identification information as a key.

13. (Amended) A method for creating a record medium in which an original data is recorded, comprising:

error correction encoding a presentation target data; and

superimposing an identification information upon the encoded presentation target data.

REMARKS

In reply to the Office Action dated October 2, 2002, Applicants have amended claims 1-3 and 8-13 to more appropriately claim the invention and expressly recite features that are inherent in the words of the original claims. A version of the amended claims with markings to show changes made is attached as "APPENDIX A TO AMENDMENT OF April 2, 2003." Claims 1-13 are currently pending.

In the Office Action, the Examiner objected to the specification as allegedly containing non-standard English. Applicants have created a substitute specification and submit herewith two versions of the substitute specification. A clean version of the specification entitled "Substitute Specification" is attached. In addition, a version of the amended specification with markings to show changes made is attached as

"APPENDIX B TO AMENDMENT OF April 2, 2003."

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In the Office Action, the Examiner rejected claims 9-12 under 35 U.S.C. § 112, second paragraph, as being indefinite; claims 1, 3, 4, 7, 9, and 11-13 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,418,852 to Itami et al. (*Itami*); and claims 2, 5, 6, 8, and 10 under 35 U.S.C. § 103(a) as being unpatentable over *Itami* and European Patent Application No. EPO 794 496 to Sako et al. (*Sako*).

Based on the amendments made and arguments presented herein, Applicants respectfully traverse these rejections.

35 U.S.C. § 112, Second Paragraph, Rejection

Regarding claims 9-12, the Examiner alleged that a nonstandard usage of the word "execute" in claims directed to a computer readable media record made the claims indefinite. Applicants have amended claims 9-12 to more appropriately claim the invention. Specifically, claims 9-12 now recite a program stored in a computer readable medium that when executed causes a processor to perform a set of operations or steps.

Applicants therefore submit that amended claims 9-12 are not indefinite and respectfully request that the Examiner withdraw the rejection of these claims under 35 U.S.C. § 112, second paragraph.

35 U.S.C. § 102(b) Rejections

In order to properly anticipate claims 1, 3, 4, 7, 9, and 11 under 35 U.S.C. § 102(b), *Itami* must explicitly disclose each and every limitation recited in the claims. See M.P.E.P. § 2131 (7th ed. 2000). Because *Itami* does not disclose all the elements recited in claims 1, 3, 4, 7, 9, and 11, Applicants respectfully traverse this rejection.

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Claim 1, as amended herein, recites a "record medium comprising an original data obtained by superimposing an identification information upon a presentation target data, to which an error correction encoding is performed."

Itami does not teach superimposing an identification information on presentation target data, as recited in claim 1. Instead, *Itami* teaches that copy-prevention data is separate and discrete from the presentation target data. *Itami* teaches recording copy-prevention data in its own area of a record medium, for example in the defect management area of a disk (col. 6, line 36), in a specific predetermined block of a disk (col. 7, lines 35-38), or in a user-inaccessible disk management area (col. 10, lines 13-16). At column 14, line 50 through column 15, line 50, which the Examiner cited as disclosing "superimposing an identification information upon a presentation target data," *Itami* teaches writing intentionally incorrect data into the Error Correction Code (ECC) area of a disk sector and writing the correct ECC data into the next sector. According to *Itami*, pirated disk copies will not have the intentionally incorrect data in the ECC area. Thus, disk-playing systems that are designed to work with the disclosed intentional-error disks will not work with a pirated copy. (Col. 15, line 50 - col. 16, line 10.) This portion of *Itami* teaches writing copy-prevention information into a defined data location that is separate from the presentation target data (in this case, the ECC area of a disk sector), not "superimposing an identification information upon a presentation target data," as recited in claim 1. (See substitute specification at pages 14-17; figs. 2 and 3.)

For at least the foregoing reasons, *Itami* fails to disclose each and every element recited in independent claim 1. Accordingly, Applicants respectfully submit that claim 1 is allowable over *Itami*. Applicants further submit that independent claims 9, 11, 12, and

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13, recite features similar to those recited in claim 1 and are therefore also allowable for at least the same reasons that make claim 1 allowable. In addition, Applicants submit that claims 2-8 and 10, which depend directly from claims 1 and 9, respectively, are also allowable for at least the foregoing reasons presented to support the patentability of their base claims. Accordingly, Applicants respectfully request that the Examiner withdraw the rejections of all these claims under 35 U.S.C. § 102.

35 U.S.C. § 103 Rejections

To establish a *prima facie* case of obviousness under 35 U.S.C. § 103, the Examiner must demonstrate that (1) *Itami* and *Sako* disclose or suggest each and every limitation recited in the claims; (2) there is a reasonable probability of success of any modification of the teachings of *Itami* in view of *Sako*, and (3) there exists some suggestion or motivation, either in the teachings of the references themselves or in the knowledge generally available to one of ordinary skill in the art, to make such a modification in a manner resulting in the claimed invention. See M.P.E.P. § 2143 (7th ed. 1998).

Regarding claim 2, the Examiner admitted that *Itami* does not teach any of the features recited in claim 2. The Examiner relied on *Sako* for these features. Applicants, however, respectfully submit that the Examiner is incorrect and that *Sako* does not disclose the features recited in claim 2.

Claim 2 specifies that "the identification information has a plurality of partial identification informations, and said plurality of partial identification informations are separately superimposed to a plurality of positions in the presentation target data to which said error correction encoding is performed." The portion of *Sako* that the

Examiner cited, column 5, lines 7-37, discloses absolutely nothing about identification informations, partial identification informations, or separately superimposing partial identification informations to different positions in the presentation target data. Instead, *Sako* discloses using two or more circuits to cipher or encode a signal on a record medium and using as part of an encoding key the identification information found somewhere on the record medium other than the data recording area. (Col. 7, lines 12-17.) For example, disk identification information such as producer ID information, dealer ID information, or country-code ID information could be used as a portion of the encoding key. (Col. 7, lines 18-24.) CIPHERING or encoding circuits with keys based on identification information do not teach or suggest the features recited in claim 2.

Similarly, regarding claims 5 and 6, the Examiner admitted that *Itami* does not teach an identification information having a plurality of partial identification informations, as recited in these claims. The Examiner again relied on *Sako* (column 5, lines 7-37) to disclose this feature. Applicants submit that the Examiner is again mistaken because, as explained just above, *Sako* does not teach or suggest this feature either. *Sako*'s disclosure of multiple ciphering circuits that use keys based in part on disk identification information (col. 5, lines 6-37) is simply unrelated to the recited plurality of identification informations that are superimposed on presentation target data.

Regarding claims 8 and 10, the Examiner admitted that *Itami* does not teach that said presentation target data is scrambled or encoded to make said identification information a key before an error correction encoding is performed. The Examiner relied on the same portion of *Sako* (col. 5, lines 7-37) to disclose these recited features. Applicants disagree again because, among other things, *Sako* does not disclose the

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"identification information" recited in claims 8 and 10. Therefore, *Sako* cannot disclose using the identification information as a key. *Sako* coincidentally uses the phrase "identification information," but not to refer to the type of identification information recited in the claims. *Sako's* use of the phrase "identification information" in the context of *Sako's* invention does not disclose identification information that is superimposed upon a presentation target data, as recited in these claims. In fact, *Sako* expressly states that the identification information is "written in an area other than the data record area of the record medium." (Col. 7, lines 14-17, 24-26.)

For at least the reasons stated above, Applicants submit that neither *Intami* nor *Sako*, whether taken alone or in combination, disclose all the elements recited in claims 2, 5, 6, 8, and 10, and that these claims are allowable over the cited references. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of all these claims under 35 U.S.C. § 103.

In view of the foregoing amendments and remarks, Applicants respectfully request the reconsideration of this application and the timely allowance of the pending claims. The Examiner is invited to telephone the undersigned Applicants' representative at 571-203-2748 if this would in any way expedite the prosecution of this application.

Please grant any extensions of time required to enter this response and charge any additional required fees to our Deposit Account No. 06-0916.

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Respectfully submitted,

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APPENDIX A TO AMENDMENT OF APRIL 2, 2003

VERSION WITH MARKINGS TO SHOW CHANGES MADE

AMENDMENTS TO THE CLAIMS

1. (Amended) A record medium comprising an original data obtained by superimposing an identification information upon a presentation target data, to which an error correction encoding is performed[, and an identification information].

2. (Amended) The record medium according to claim 1, wherein said identification information has a plurality of partial identification informations, and said plurality of partial identification informations are separately superimposed upon [to] a plurality of positions in the presentation target data to which said error correction encoding is performed.

3. (Amended) The record medium according to claim 1, wherein said identification information is superimposed upon [to] a data part stored in an area wherein a control information of contents data [in a record area] is recorded.

8. (Amended) The record medium according to claim 1, wherein processing said presentation target data [is] by one of scrambling[ed or] and

encoding[ed to make] using said identification information as a key occurs before [an] the error correction encoding is performed.

9. (Amended) A program stored in a computer readable medium, [on which a program for the computer to function is recorded, comprising a program] which when executed[s] causes a processor to perform steps comprising:

[error correction encoding means for] encoding a presentation target data by [error-correction-code] error-correction-encoding ; and

[identification information superimposed superimposing means for] superimposing an identification information upon [to] the error-correction-encoded presentation target data [in which an error correction encoding by said error correction encoding means].

10. (Amended) The program stored in a computer readable medium [computer readable record medium on which a program is recorded] according to claim 9, further comprising:

[a program for] performing one of scrambling and encrypting said presentation target data [making] using said identification information as a key[, and

executing scramble/encryption means for delivering it to error correction encoding means].

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11. (Amended) A program stored in a computer readable [record] medium,
[on which a program for the computer to function is recorded, comprising a program]
which when [executes] executed causes a processor to perform steps comprising:

reading information, including an identification information superimposed
upon presentation target data, from a record medium;

[identification information deciding means for] extracting [an] the
identification information from [a] the read information [before an original data read from
the record medium according to claim 1 is error-corrected];

[judgment means for] judging whether [a] data stored in said record
medium is an original data based on [an] the identification information extracted [to said
identification information decoding means is an original data], and

[for] outputting a judgment result.

12. (Amended) A program stored in a computer readable [record] medium,
[on which a program for the computer to function is recorded, comprising a program]
which when [executes] executed causes a processor to perform steps comprising:

reading information, including an identification information superimposed
upon presentation target data, from a record medium;

[identification information deciding means for] extracting [an] the
identification information from [a] the read information [before an original data read from
the record medium according to claim 8 is error-corrected];

[data presentation means for] performing one of unscrambling [or] and
decrypting [said] presentation target data [which is scrambled or encrypted in which]

using the [an] identification information [extracted to said identification information
deciding means is made] as a key.

13. (Amended) A method for creating [In] a record medium in which
an original data is recorded, comprising: [said original data is obtained by]
error correction encoding a presentation target data; and
superimposing an identification information upon the encoded [a]
presentation target data [to which an error correction encoding is performed, and an
identification information].

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Application Number: 09/267,639
Filing Date: March 15, 1999
Attorney Docket Number: 04329.2078-00

APPENDIX B TO AMENDMENT OF APRIL 2, 2003

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Marked-up Substitute Specification

TITLE OF THE INVENTION

RECORD MEDIUM, RECORD MEDIUM MANUFACTURING DEVICE,
COMPUTER READABLE RECORD MEDIUM ON WHICH PROGRAM IS
RECORDED, AND DATA PRESENTATION DEVICE

BACKGROUND OF THE INVENTION

The present invention relates to a first record medium on which original data (there are two cases: when the term “original data” is used in the specification [of] an original data which becomes record target to the record medium and an original data which becomes a presentation target from the record medium [when a term “original data” is used in the specification]) is recorded, and a second record medium₁ which is distinguishable [to a] from the first record medium₁ on which [a copy] data copied from the first record medium is recorded.[, especially,] This invention also relates to a record medium capable of preventing an unauthorized copy of the original data, a record medium manufacturing device, a computer readable record medium on which a program is recorded₁ and a data presentation device which presents the data on the record medium.

Various record media to store the digital data of the multimedia data [are] have been developed in recent years. If data is copied from the digital record medium, [the] a record medium on which the same data as the original data is copied is [achieved] created. [Therefore, it] It is important to prevent an unauthorized copy [surely] to protect

a copyright, and in addition, to develop a technology and a market which uses the medium [by which various] which contains contents from the copyright holder.

For example, conventionally, in [the] some digital record media such as a DAT (Digital Audio Tape) and [an] MD (Mini Disc), a technology which can perform only once (first generation) digital copy is provided, [besides] in addition to a general medium in which [a] copying is completely permitted (copy freely).

These technologies are called CGMS (Copy Generation Management System) and SCMS (Serial Copy Management System), and [has] have a mechanism that [a twice] prevents copying (second generation) from the medium manufactured by [the] copying from the medium to which only the first generation copy is permitted [cannot be manufactured]. As a result, an unauthorized copy [is prevented] cannot be manufactured.

In CGMS and SCMS, information [of] as to whether it is a copied medium (Whether a copy of a next generation can be performed or not?) is shown by [a] flag information in two bits.

However, in such CGMS and SCMS, it is comparatively easy to falsify this on the transmission line when the flag information is transmitted with the main body of contents. Therefore, there is a problem that an unauthorized copy may be performed by the falsification of the flag information[, the]. The medium to which it is copied without authorization [and] is generally called [as] a piracy edition, which can circulate.

BRIEF SUMMARY OF THE INVENTION

An object of the present invention is to provide a record medium, a record medium manufacturing device, a computer readable record medium on which a program is recorded in which it can be judged whether [a] digital data recorded in the record medium is [an] original data or [a] copied data, and an unauthorized data copy can be prevented, and, in addition, a data presentation device which presents the record medium.

A record medium of the present invention comprises an original data obtained by superimposing a presentation target data, to which an error correction encoding is performed, [and] with an identification information.

In the present invention, an original data in which a presentation target data and an identification information are superimposed is stored in the record medium. The identification information disappears by the error correction processing when the original data is taken out and is presented, and the presentation data becomes different data from the original data. That is, the identification information is forcibly embedded into the original data as an error data in the present invention. This superimposed identification information is of a frequency [of the extent] that will be surely removed by the error correction processing.

It can be judged whether or not the record medium stores the original data, if the identification information is taken out before the error correction processing is [performed] performed. Therefore, it can be judged whether the record medium in

which [whether] the [recorded] digital data is recorded is an original data or a copied data [can be judged], and an unauthorized data copy can be prevented [can be provided].

The preferred [manners] characteristics of the above-mentioned record medium are as follows.

(1) The identification information has a plurality of partial identification informations, and the plurality of partial identification informations are separately superimposed to a plurality of positions in the presentation target data to which the error correction encoding is performed. If the [The] identification information [can become] is made sufficiently long, [and] the data reliability can be improved. In addition, safety can be improved since the identification information is distributedly [to be] embedded in the original data.

(2) The identification information is superimposed to a data part stored in an area where a control information of contents data in a record area is recorded. With this configuration, change of the identification information by the third party can be prevented after the record medium is manufactured.

(3) [An information] Information to acquire a superimposed position of the identification information is further provided. It makes [easy and certain to take] taking out the identification information easy and certain.

(4) The identification information has a plurality of partial identification informations, including [an] information to acquire [a] the superimposed position of the

identification information, which has [an] initial value information, [a] superimposed position information indicating [a] the superimposed positions of the plurality of partial identification informations, and a plurality of position informations to acquire [a] the position of the superimposed position information, a first position information to acquire the position of the superimposed position information is recorded at a position obtained by converting the initial value information by a predetermined function or a position shown by a position obtained as a result of the conversion, and a second or later position information is recorded in another position of the position obtained by converting a storage information of a position of a result when an information stored at another position of a side where the position information is not stored is further converted by the predetermined function in any positions obtained by a conversion result of the predetermined function, or a storage information at a position indicated to a position of a result of conversion one by one. Since such means is provided, a concealment of the position information and the superimposed position information can be improved besides the similar function and advantage to (3) is achieved.

(5) The identification information has a plurality of partial identification informations, including [an] information to acquire a superimposed position of the identification information, which has an initial value information, [a] superimposed position information indicating a superimposed position of the plurality of partial identification informations, and a plurality of position informations [to acquire] for acquiring a position of the superimposed position information, an initial position information is recorded at a position obtained by converting the initial value information

by a predetermined function or a position shown by a position obtained as a result of conversion by the predetermined conversion formula, and a position information after that is recorded at a position based on a data recorded by a predetermined distance at a position indicated by a position information obtained immediately before or a distance obtained by a predetermined conversion formula, or a position obtained by converting a position information obtained immediately before by a predetermined conversion formula. Since such means is provided, a concealment of the position information and the superimposed position information can be improved besides the similar function and advantage to (3) is achieved.

(6) A superimposed position of the identification information is given by a table form. Since such means is provided, a concealment of the position information and the superimposed position information can be improved [besides the similar] in addition to achieving functions and advantages similar to (3) [is achieved].

(7) The presentation target data is scrambled or encrypted [to make] using the identification information as a key, before an error correction encoding is performed. Since such means is provided, [fair] output data presentation cannot be performed if the scramble or the encryption cannot be released by taking out the identification information as a key when the presentation target data is presented. Thus, an unauthorized copying of [to] the presentation target data can be prevented.

Of course, the present invention can be applied also to a record medium manufacturing device to manufacture the above-mentioned record medium and the

undermentioned data presentation device which presents the data recorded in the record medium manufactured with the manufacturing device, for example.

The data presentation device of the present invention comprises an identification information decoding means to extract identification information from [a] read information before [a] the read original data from one of above-mentioned record media is error-corrected, and judgement means to judge whether or not data stored in the record medium is an original data based on the identification information extracted by the identification information decoding means and to output a judgement result. Since such means is provided, judgement as to whether or not data stored in the, record medium is an original record, [in addition,] and whether a record medium is an original record medium [can be judged] can be done, and the judgment result is output. If this judgment result [of the output] is used, the prevention of an unauthorized copy and the generation management of data copy etc. can be easily performed.

Moreover, [the] a data presentation device which presents the data recorded on the record media from (1) to (7) can be achieved as well as the above-mentioned. The same advantage as the above-mentioned record medium can be achieved according to such a data presentation device.

In addition, [the] another embodiment is a record medium on which a control program is recorded to achieve the function of the above-mentioned record medium manufacturing device and the data presentation device [in the] on a computer [is recorded can be achieved], and, in that case, a similar advantage to the above-mentioned can be obtained. For example, the following record media can be achieved.

For example, a computer readable record medium on which a program for the computer to function is recorded, comprises a program which executes: error correction encoding means for encoding a presentation target data by error-correcting code; and identification information superimposed means for superimposing an identification information to the presentation target data [in which an] that was error correction [encoding] encoded by the error correction encoding means. Here, a program for scrambling [and] or encrypting the presentation target data [making] uses the identification information as a key, and [executing scramble/encrypting] means for delivering it to error correction encoding means is further provided.

Moreover, a computer readable record medium on which a program for the computer to function is recorded, comprises a program which executes: identification information decoding means for extracting an identification information from a read information before an original data read from the above-mentioned record medium is error-corrected; judgment means for judging whether a data stored in the record medium₁ based on an identification information extracted to the identification information decoding means₁ is an original data, and for outputting a judgment result. A computer readable record medium on which a program for the computer to function is recorded, comprises a program which executes: identification information decoding means for extracting an identification information from a read information before an original data read from the above-mentioned record medium is error-corrected; data presentation means for unscrambling or decrypting the presentation target data which is scrambled

or decrypted in which an identification information extracted to the identification information decoding means is made as a key.

As described above in detail, according to the present invention, since the identification information is superimposed to the presentation target data which is error-correcting-coded and the result thereof is made to an original data, a record medium, a record medium manufacturing device, a data presentation device, and a computer readable record medium on which a program is recorded, in which it can be judged whether a digital data recorded in the record medium is an original data or a copied data, and an unauthorized data copy can be prevented.

Additional objects and advantages of the invention will be set forth in the description which follows, and in part will be obvious from the description, or may be learned by practice of the invention. The objects and advantages of the invention may be realized and obtained by means of the instrumentalities and combinations particularly pointed out hereinafter.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

The accompanying drawings, which are incorporated in and constitute a part of the specification, illustrate presently preferred embodiments of the invention, and together with the general description given above and the detailed description of the preferred embodiments given below, serve to explain the principles of the invention.

FIG. 1 is a block diagram which shows an example of a main configuration of the record medium manufacturing device according to the first embodiment of the present invention;

FIG. 2 is a figure to explain an outline idea of the error correction;

FIG. 3 is a figure to explain the principle of preventing an original data from copy with taking out the identification information M of the original data by using the error correction processing;

FIG. 4 is a block diagram which shows an example of a main configuration of the record medium manufacturing device according to the second embodiment of the present invention;

FIG. 5 is a block diagram which shows an example of a main configuration of the data presentation device of the embodiment;

FIG. 6 is a figure to explain an operation of the data block and the identification information decoder;

FIG. 7 is a figure to explain the configuration of the data block and an operation of the identification information decoder in the third embodiment' of the present invention;

FIG. 8 is a block diagram which shows an example of a main configuration of the data presentation device of the fourth embodiment of the present invention;

FIG. 9 is a figure to explain the configuration of the information storage table and a method of acquiring superimposed position information of partial identification information according to the embodiment;

FIG. 10 is a figure to explain the configuration of the information storage table and a method of acquiring superimposed position information of partial identification information according to the fifth embodiment of the present invention;

FIG. 11 is a block diagram which shows an example of a main configuration of the record medium manufacturing device of the sixth embodiment of the present invention; and

FIG. 12 is a block diagram which shows an example of a main configuration of the data presentation device of the embodiment.

DETAILED DESCRIPTION OF THE INVENTION

Hereinafter, the embodiments of present invention will be explained.

(First Embodiment)

A method of embedding the identification information in the main body of data of the digital record medium by using the error correction technology in the first embodiment will be explained.

FIG. 1 is a block diagram which shows an example of a main configuration of the record medium manufacturing device according to the first embodiment of the present invention.

The record medium manufacturing device shown in FIG. 1 has an A/D converter 1, an error correction encoder 2, and an identification information superimposition circuit 3, and these circuits relate to the embedded part of the identification information in which the error correction technology is used. The explanation about a general configuration part which affects manufacturing the record medium will be omitted.

The record medium 4 manufactured here is a disc which is a readable and readable/recordable medium such as a DVD (Digital Video Disc, Digital Versatile Disc)-ROM, DVD-RAM, MD, CD, CD-ROM, and CD-R, etc., and an original record medium on which the multimedia data such as documents, audio, still pictures, and the motion images, etc. are recorded.

In the first embodiment, the original record medium 4 is manufactured [as] such that the identification information M stored only in the original record medium disappears when the data taken out from the original record medium 4 is recorded on other record media.

As [the] a component for that, first, the error correction encoder 2 [makes] takes the digital data 7, adds to its [which is] contents an error correction encoding, and generates the main body 8 of data stored in the record medium 4. [On the other hand, the] The identification information superimposition circuit 3 [embedds] embeds the identification information M in a part of the main body 8 of data, and outputs the corresponding superimposed data 9 to the record medium 4.

Next, [an] operation of a record medium manufacturing device as mentioned above, constructed according to the first embodiment, will be explained.

First, the digital contents 5 and the analog contents 6 of the multimedia data to be recorded on the original record medium 4 are prepared. [Where, in] In the case of [an] analog data, first, a sampling and a quantization are performed in the A/D converter 1 and the data is converted into [the] digital data 7.

An appropriate error correction encoding is performed to the digital data 7 which consists of the digital contents 5 [or] and the analog contents 6 [to] on which the A/D conversion [is] was performed [in] by the error correction encoder 2 to correct [the] any error occurring in the transmission line, and the main body 8 of data is obtained.

Next, the identification information superimposition circuit 3 superimposes the identification information M onto a part [of a symbol] of the digital data (main body 8 of data) [to] on which an error correction encoding is performed. When it is expected the error is embedded to the identification information M, the identification information to be added is made an error correction encoding beforehand. As a result, the identification information is divided into an appropriate size (byte unit etc.) when it becomes long, and is made as partial identification informations M1, M2, ..., Mi, ..., Mn, respectively. The identification information M shown in FIG. 1 is the information to which an error correction encoding is performed beforehand like this.

The main body 9 of the identification information superimposed data obtained thus is stored in the record medium 4 as [an] original data, and the disc manufacturing is completed.

Therefore, the identification information M (partial identification informations M₁, ..., M_n) is embedded [under] into a part of the digital data (main body 8 of data) to which an error correction encoding is performed as shown in FIG. 1 either in a predetermined position in all data in the record medium 4 or in the data for every data block with constant size. Each of the partial identification information M_i [actually] is distributed in the data block and is embedded as shown in FIG. 1. The data [where] into which the identification information M is embedded is the original data of the record medium 4.

A method of [fairly] taking out the digital data 7 which is the contents of the record medium 4 manufactured like this, and a method of taking out the identification information M[,] and preventing [an] unauthorized copying of the original data will be explained next.

FIG. 2 is a figure to explain an outline idea of the error correction.

FIG. 3 is a figure to explain the principle of preventing [from the] copying of the original data when the identification information M is taken out [from] of the original data by using the error correction processing. The error correction technology shown in FIG. 2 and FIG. 3 is extremely simplified for the convenience of [the] explanation, and an actual error correction technology is more complex.

First, [the] a data error [is occurred by the] occurs by bit inversion [at a] when data is read[ing] from the record medium [and] or during a data transmission as shown in FIG. 2(a). It is a basic idea to perform [the] error correction [for giving] using redundancy [to] of the data [to] and thus present accurate data even if such a bit inversion occurs (FIG. 2(b)).

However, [For this reason,] some bit inversions [are occurred] can occur even if [the] redundant data for [the] error correction is added to real contents data, and real contents data can be presented (for example, FIG. 2(c)). [The] This processing is the error correction encoding processing in the error correction encoder 2 shown in FIG. 1. Therefore, when [the] a data error [is gotten] gets into the data that [an] has error correction encoding processing [is] performed, data including the error is [presented] changed to [the] data with no error [before the error is gotten into] by the error correction decoder [in] before the error gets to the data presentation device.

The present invention [pays attention to] uses this effect. [respect.] One embodiment of the [The] present invention [is an invention to] records the information which is considered [as an] error data [in] by the above-mentioned error correction technology on the record medium 4 as the identification information M. That is, the identification information superimposition circuit 3 according to one embodiment of the present invention superimposes the identification information M [in a form considered to be an error data] into the main body of data in a form considered to be error data by [in] the data presentation device which presents the record medium 4. This superimposition [is achieved to embed] embeds the identification information M into a part of data of the

main body 8 of data at a low frequency [of extent to which the] rate such that satisfactory error correction can be performed [enough] by [the] error correction decoding. Therefore, when the part where the identification information M is superimposed (as shown in FIG. 2(d)) [also] is presented by [the] a data presentation device such as a DVD player[s], it is presented by the error correction function the same as the initial data [a] data (digital data 7) before the identification information M [is] was superimposed [by the error correction function].

The presentation (data output) of original record medium 4 manufactured thus will be explained referring to FIG. 3. Here, two cases will be explained: [that] a part where identification information M is embedded₁ and a part [not so will be explained] without embedded identification information.

The original record medium 4 is [set to the] put into a data presentation device[s], such as a DVD-RAM drive and a player, and the device reads [reading] the data on the record medium and [the] outputs [of] the read data [are performed].

For a [A] part [of bit] of the read data where the identification information M is not superimposed, a bit is reversed [reverses about the part] (FIG. 3(a)) [where the identification information M is not superimposed] if there is a read error when data is read from the record medium. [However] Thus, the reversed-bit error data is corrected, and the final output is [as] the same [data] as the real digital data 7 [by a] after the usual error correction decoding processing 10.

Next, consider the [a] cases of [occurring] an error occurring, and an error not occurring [an error will be explained] when [the] data is read out from the record medium [at] from a part where the identification information M is superimposed (FIG. 3(b)).

First, [a] consider the case of no error occurring [no error at the time of] when reading data [of] from the record medium (FIG. 3(b-1)).

The identification information M is embedded in the original data of the original record medium 4 beforehand as the data error. The identification information M is considered [an] error data and is corrected by the error correction decoding processing 10 when this is read, and consequently the same data as the real digital data 7 is output. This output data is [a] data corresponding to the real contents data. Therefore, the data presentation is [fairly] accurately performed. However, this output data is not the same data as the original data of the original record medium 4. The reason is [why] that the identification information M in the original data has been deleted by the error correction. Therefore, when this output data is copied, the [copy] copied data becomes [a] data different from the original data. In [the following] subsequent data presentations, an unauthorized copy can be prevented by using the difference point thereof. When the identification information M is taken out and used, the identification information is extracted after reading from the record medium 4 and before performing the error correction.

Next, [a] consider the case of the read error occurring [the read error of the record medium] when the part of the record medium where the identification information M is superimposed is read [presented] (FIG. 3(b-2)).

In this case, [an] the output data is corrected [as well] just as for each above-mentioned case (FIG. 3(a) and FIG. 3(b-1)) and the same data as the digital data 7 is output. [On the other hand] However, the data error should be included in the identification information extracted in this case. Then, if the error correction processing is performed to the identification information which includes this error, a first identification information M will be taken out. Though [an] the identification information is short in the example of FIG. 3 for [the] convenience of [the] explanation, when the error correction processing is performed [to] on the identification information, this identification information M becomes [a] long enough as described above. Specifically, the error correction is performed as follows. Error correction and data presentation of the superimposed identification information [superimposed] data are performed by the error correction decoding. Here, when [an] error data [is occurred] occurs in the identification information and read information/transmission line, further error correction is performed.

The identification information which indicates that it is an original record medium [in the data made an error correction encoding] is superimposed [to] on the data in the record medium as an error after error correction encoding according to the embodiment of the present invention [as an error like the] above-mentioned. Therefore, it can be judged whether [it] a record medium is an original record medium by extracting the

identification information before [the] processing [of the] by error correction decoding when reading [presenting].

Moreover, in the data presentation device, since the identification information is processed as an error after the error correction decoding processing completes, [a] the real digital data is correctly decoded. Therefore, it becomes possible to clearly distinguish the record medium manufactured by [the] copying from the original record medium [since] because the identification information which indicates that it is original data is [missed] missing when the presentation data is copied onto another record medium.

Therefore, it is possible to surely distinguish the medium manufactured by [the] copying from the original record medium since the copy management information is not transmitted on the transmission line with the presentation target data[as the conventional ones]. In addition, [an] unauthorized copying and [an] unauthorized use of the data become very difficult since it is difficult for a general user to superimpose the identification information [to the] on data [in which an] that has been error correction [encoding is performed] encoded.

In addition, since the identification information consists of the partial identification information, by distributing and superimposing this to the main body 8 of data, the concealment of the identification information and safety can be improved, and the data length can be[come] longer [enough]. Therefore, it is possible to adopt a configuration in which [an] error correction encoding is performed [in] on the identification information

extracted, for example, and thus the reliability of the identification information can be improved.

The record medium manufacturing device to manufacture the above-mentioned record medium can manufacture the record medium [like the above-mentioned] by providing the identification information superimposition circuit.

(Second Embodiment)

A mechanism to specify superimposed positions of the superimposed identification information M in the record medium 4 in the first embodiment will be explained in each of following embodiments.

In this embodiment, a record medium manufacturing device and a data presentation device which embed the superimposed position specification information in the main body of data in addition to the identification information M when manufacturing the record medium will be explained.

FIG. 4 is a block diagram which shows an example of a main configuration of the record medium manufacturing device according to the second embodiment of the present invention, and the same reference numeral is used to refer to the same part as FIG. 1 and an explanation of these parts will be omitted.

This record medium manufacturing device is constructed similar to the first embodiment [besides] except for being constructed [for] with the identification information superimposition circuit 3b to superimpose the identification information M in the main body 8 of data [as well as] instead of the identification information

superimposition circuit 3, and [to] except for generating [generate the] original data 9b [adding] which adds the superimposed position specification information of the identification information to the main body of data [where this] along with identification information M[is added]. The superimposed position specification information is not superimposed to the main body of data but is added as additional data.

The record medium 4b is manufactured by storing the original data 9b produced thus.

[On the other hand,] FIG. 5 is a block diagram which shows an example of a main configuration [of] for the data presentation device of this embodiment.

This data presentation device demodulates an error-corrects data D1 and D2 read from the record medium 4b by a disc read part (not shown) with the demodulation/error correction decoder 11, and presents and outputs through the data output controller 12.

When it is judged that the identification information output from the identification information decoder 13 is not right [with] by the identification information judgment circuit 14, the data output controller 12 stops the presentation/output according to [the] a control signal from the identification information judgment circuit 14.

The identification information decoder 13 has the superimposed position specification circuit 15 and the identification information extraction circuit 16.

The superimposed position specification circuit 15 decodes the superimposed position of the identification information in the data block based on the superimposed position specification information from the record medium 4b, and specifies the decoded

superimposed position for the identification information extraction circuit 16. This superimposed position specification information is [an] information which is read from the record medium 4b by the disc read part (not shown), and, in addition, demodulated and error-corrected by the demodulator/error correction decoder 17.

The identification information extraction circuit 16 reads data sections [to specify] specified by the superimposed position from the record medium through the disc read part, extracts the identification information M (or, partial identifying information M_i), and sends it to the identification information judgment circuit 14. In addition, since the remainder [data] of the [remainder] data from [to] which the identification information is extracted is a part of the main body 8 of data in FIG. 1, this is input to the demodulator/error correction decoder 11 as data D2.

Next, [an] operation of the record medium manufacturing device and data presentation device [of] constructed in accordance with the embodiment [as] mentioned above [constructed] will be explained.

First, a manufacturing process of the record medium 4 will be explained.

It is similar to the first embodiment until the digital data 7 from the analog contents 6 or the digital contents 5 in FIG. 4 become the main body 8 of data in which an error correction encoding is performed.

Next, the identification information M is superimposed [to] at the position [based on] specified by the superimposed position specification information for the main body 8 of data by the identification information superimposition circuit 3b. The superimposed

identification information M is similar to the first embodiment in [the point which] that it is [the] long enough to [long to] be able to perform the error correction[,] and is divided into the partial identification information M_i . Moreover, to improve the reliability of the identification information M, a lot of the same identification information may be superimposed.

In addition, the superimposed position specification information is added to the main body 8 of data to which the identification information M is superimposed. This added superimposed position specification information is performed an error correction encoding as well as other contents digital data. The superimposed position specification information can be added before superimposition of the identification information M. The [superimposed] procedure of superimposing the identification information is performed when the disc is manufactured is performed to correctly operate the identification information extraction described later.

[The] A data block which consists of main body 8 of data to which the identification information M and the superimposed position specification information are [is] superimposed and the superimposed position specification information is produced. In the data block, a lot of blocks may be stored in one record medium 4b, [and] or one block may correspond to one record medium 4b. [Even in] In any case, the data which is produced with the above-mentioned identification information superimposition circuit 3b and [should be] stored in the record medium 4b is the original data 9b.

Consequently, the original data 9b is stored in the medium and the record medium 4b is completed.

Next, the data presentation from this record medium 4b will be explained.

First, the record medium 4b which consists of [the] a disc such as a DVD is [set] put in [the] a data presentation device as shown in FIG. 5. An encryption technology for [the] unauthorized copy prevention has already been introduced in the DVD. The explanation of [an] existing protection technology will be omitted in this embodiment. The contents are protected with two kinds of encoding keys in the DVD according to the prior art, and whether contents are encoded is not described in this embodiment. Naturally, this embodiment[s], can be adopted to these existing protection technologies.

The superimposed position specification information is read from the [set] DVD disc at the first data reading position in each data block. After the demodulation and the error correction decoding processing are performed in the demodulator/error correction decoder 17, this superimposed position specification information is delivered to the superimposed position specification circuit 15.

The superimposed position specification circuit 15 obtains the position where the identification information M in the data is superimposed based on [a] the received superimposed position specification information. This superimposed position is delivered to the identification information extraction circuit 16.

The main body part of the data which corresponds to normal contents (data D1) is read out, and [the] error correction is performed and [the] presentation data is output through the demodulator/error correction decoder 11 and the data output controller 12. [On the other hand,] In addition, the main body part of data to which the identification

information M [is] was added [under the main body part of data] is read out, and the read data is delivered to the identification information extraction circuit 16 not to the demodulator/error correction decoder 11[when the embedded part is read]. This is achieved [since] because the identification information extraction circuit 16 acquires the embedded position of the identification information M from the embedded position specification circuit 15.

The corresponding identification information M is extracted from data (D2 + M) which includes the identification information M (partial identification information M_i in reading once), and data D2 is sent to the demodulator/error correction decoder 11 and is presented and output like as the data D1.

The identification information extraction circuit 16 performs the error correction when the whole of the identification information M_x which consists of the partial identification information units M_{i_x} is obtained, and sends the result (identification information M) to the identification information judgment circuit 14. The identification information M is extracted at first of the data block reading in the chain in this embodiment as described later.

The identification information judgment circuit 14 verifies the validity of extracted identification information M. If the extracted identification information M indicates an unauthorized copy, [the] a control signal is output to the data output controller 12 [and] so that reading and the presentation of the data are stopped[when it is unauthorized].

Even when the identification information M is right, the [The] identification information M has disappeared from the presentation data [since] because above-mentioned data D1 and D2 (D2 may be $D2 + M$) are output as the presentation data through the demodulator/error correction decoder 11[even though the identification information M is right]. Therefore, even if this presentation data is copied by any means, the identification information M cannot be extracted from the copy record medium to which the copy data is stored [different from the record medium 4b to which the original data 9b is stored because it is not present on the copy record medium. Therefore, the present invention has the advantage that an unauthorized copy can surely be prevented.

Next, specific operation of [the] an identification information decoder 13, [especially] including the superimposed position specification circuit 15₁ will be explained.

FIG. 6 is a figure to explain an operation of the data block and the identification information decoder.

This data block has the superimposed position specification information of the identification information and the main body of data [to] on which the identification information is superimposed. The superimposed position specification circuit 15 performs the conversion processing shown in FIG. 6.

First of all, an initial value (seed) [necessary] for specifying the position is read from among the superimposed position specification information. And, the

superimposed position specification circuit 15 [converts] calculates an initial value necessary for specifying the position by using a predetermined conversion function $f(\cdot)$, and thus obtains initial position information $f(\text{seed}) = (x_1, y_1)$. This obtained information indicates a position in the [area] block where the [superimposed position specification information] identification information of the [identification information] superimposed position specification information is recorded.

Next, data q_1 recorded [on] at the position shown by the initial position information (x_1, y_1) is chosen by the superimposed position specification circuit 15. Data q_1 is converted by a predetermined conversion function $g(\cdot)$, [and] yielding a position information $g(q_1) = (\alpha_1, \beta_1)$ [on which] indicating where the identification information is superimposed. This obtained position information is delivered from the superimposed position specification circuit 15 to the identification information extraction circuit 16, and the partial identification information MI superimposed [to] at the specified position is extracted by the identification information extraction circuit 16.

Next, a position function $f(p_2) = (x_2, y_2)$ calculates where a following superimposed position specification information is recorded, which location is obtained by the superimposed position specification circuit 15 [with] using a predetermined distance [at a] from the position indicated by the above-mentioned initial position information (x_1, y_1) or a distance obtained by a predetermined conversion formula (distance is 1 in the right side in FIG. 6).

All superimposed position information is obtained by executing the above-mentioned operation repeatedly (sequentially). That is, a position information (x_i, y_i)

where an i -th superimposed position specification information q_i is recorded is obtained by $f(p_i) = (x_i, y_i)$, and a position $g(q_i) = (\alpha_i, \beta_i)$ where the identification information is superimposed is obtained by using the information q_i which is recorded at the position [is obtained]. In addition, an operation of extracting the partial identification information M_i superimposed [to] at the position is repeated sequentially until all (n pieces) partial identification informations are extracted.

In above-mentioned operation, when positions (x_i, y_i) and (α_i, β_i) which have been chosen already by the conversion $f(\cdot)$ and $g(\cdot)$ are obtained respectively, to avoid the same value being chosen every time by the operation thereafter, data recorded at the position (further right adjacent position in FIG. 6) which is adjacent in a predetermined distance from the position where the data is recorded or at a distance obtained by a predetermined conversion formula is [chosen again] used to calculate the next value.

Since the record medium according to the embodiment of the present invention stores the superimposed position specification information [besides] in addition to having a similar configuration to the first embodiment as mentioned above, the identification information can be easily and certainly taken out.

Since the superimposed position of the partial identification information is stored in the superimposed position specification information [to] obtained through the predetermined conversion, the concealment of the superimposed position [can be] is improved, and the identification information [be] is safer. In addition, since [this] the

superimposed positions can be [taken out] read sequentially, taking out the identification information [can be] is made easy.

Since the record medium manufacturing device of this embodiment comprises the identification information superimposition circuit 3b, the superimposed position specification information [besides] can be added easily to the superimposition of the identification information [can be added], and above-mentioned record medium 4b can be manufactured.

In addition, since the data presentation device of this embodiment comprises the identification information decoder 13 and the identification information judgment circuit 14, an advantage based on the above-mentioned record medium 4b can be achieved[,]
because a judgment can be made as to whether the data stored in the record medium [in addition] is original data and whether it is an original record medium [can be judged], and the judgment result [is] can be output. [An] Presenting an unauthorized copy by the data output controller 12 can be prevented by using this output judgment result

In this embodiment, the identification information judgment circuit 14 judges [only] whether a [set] disc is the original record medium 4b which stores only the identification information M, and controls the data output. The present invention has [the] a feature [in the point that] allowing the data corresponding to contents on the original record medium [can] to be distinguished from the copy discs. [Then] Furthermore, by properly combining this function[, and] with CGNS or SCMS, etc., it is also possible to construct an unauthorized copy prevention system (various data copy generation management) [being] that is ultrasafe and intelligent.

In the processing shown in FIG. 6, it is also possible to obtain the superimposed position of the partial identification information M_i by the conversion $g(\cdot)$ assuming the data recorded at the adjacent position to be q_i after the position of p_i is obtained first by conversion $f(\cdot)$ by replacing the relationship of the superimposed position specification information p_i and q_i . For example, all of only the superimposed positions of the partial identification information M are previously obtained and deliver to the identification information extraction circuit 16 kept together, and the identification information extraction circuit 16 may take out the identification information M according to a proper timing.

(Third Embodiment)

In the second embodiment, it is comparatively easy to [presume] figure out the position where an initial value is recorded because an initial position information (x_l, y_l) is obtained by [covering] using an initial value (seed) which is recorded at the predetermined position. This embodiment is an embodiment in which an arithmetic to obtain [an] initial position information becomes complicated, and the [presumption] discovery of the position by the third party becomes more difficult.

FIG. 7 is a figure to explain an operation of the configuration of the data block and the identification information decoder in the third embodiment of the present invention.

That is, the record medium manufacturing device of this embodiment is constructed such as the record medium which becomes a data block shown in FIG. 7 is manufactured and data presentation device becomes executable a new conversion

processing $h(\cdot)$. That is, the record medium manufacturing device of this embodiment manufactures the record medium which becomes a data block shown in FIG. 7, and the data presentation device is constructed that the new conversion processing $h(\cdot)$ becomes executable.

A superimposed position taking out processing of the identification information in this embodiment will be explained.

The disc manufacturing and the presentation procedure of the record medium in the parts other than the added conversion processing are similar to the second embodiment.

First of all, an initial value $seed1$ necessary for specifying the position with superimposed position specification circuit 16 is read from among, the superimposed position specification information, and is converted by the predetermined conversion $h(\cdot)$. A position (x_s, y_s) where the initial value $seed2$ used to a true position specification is recorded is obtained. Subsequently, the $seed2$ is converted by the conversion $f(\cdot)$, and an initial position information $f(seed2) = (x_l, y_l)$ is obtained. An obtained information indicates a position in the area where the identification information superimposed position specification information is recorded. The following operations are similar to the second embodiment.

As described above, the record medium and the data presentation device according to the third embodiment of the present invention can improve the safety of specified information at the superimposed position and the concealment further more

since the seed is converted by two stages besides a similar configuration to the second embodiment is provided.

(Fourth Embodiment)

In the fourth embodiment, a method different from the second and third embodiments as for the mechanism to specify the superimposed position in the record medium 4 of the identification information M superimposed in the first embodiment will be explained.

FIG. 8 is a block diagram which shows an example of a main configuration of the data presentation device of the fourth embodiment of the present invention.

The data presentation device according to the, fourth embodiment is constructed similar to the second embodiment, [besides] except a position information table 21 is provided in the identification information decoder 13b and the superimposed position specification circuit 15b obtains [by using] not only the superimposed position of identification information [not only] from record medium 4b but also information on position information table 21.

[A superimposed] Superimposed position information [of] for each partial identification information M₁, M₂, ..., M_n, [corresponding to indexes T₁, T₂, ..., T_m] which are the superimposed position specification information corresponding to indexes T₁, T₂, ..., T_m, are stored in a position information table 21.

FIG. 9 is a figure to explain a method of acquiring the configuration of the information storage table [in the embodiment] and the superimposed position information on the partial identification information in this embodiment.

The record medium manufacturing device and [an] operation of a data presentation device according to this embodiment will be explained.

First, the presentation procedure of the disc manufacturing and the record medium is similar to the second embodiment. A point different from the second embodiment is that only an index T_i is added and recorded as the superimposed position specification information, and not a superimposed position of each of the partial identification information. These indexes T_i, T_2, \dots, T_m may correspond to each of a [plural kind] plurality of record media or correspond to each data block of one record medium (respectively).

When the disc is [presented] read by the data presentation device, this index T_i is read first, and the superimposed position pattern of the partial identification information corresponding to the index T_i is chosen from the position information table 21 in the superposed position specification circuit 15b. This superimposed position pattern is delivered from the superimposed position specification circuit 15b to the identification information extraction circuit 16, and the identification information extraction circuit 16 extracts the partial identification information M_j ($j = 1, 2, \dots, n$) superimposed on each position.

The following processing is similar to the second embodiment.

As described above, in the record medium according to the fourth embodiment of the present invention, only the index is stored as the superimposed position specification information, a table corresponding to the index is provided in the data presentation device, and the superimposed position of the identification information can be acquired from the table based on the index. Therefore, [it] one cannot easily know the superimposed position of the identification information [only] by examining the record medium since [an] the information recorded in the record medium is only [the] an index. Therefore, concealment of the identification information and safety [can be] are further improved in this embodiment.

(Fifth Embodiment)

The index T_i is directly stored as the superimposed position specification information in the fourth embodiment. A seed is stored as the superimposed position specification information in place of the index T_i , and the [corresponding] seed is converted and the index T_i is obtained in this embodiment.

FIG. 10 is a figure to explain a configuration of the information storage table and a method of acquiring the superimposed position information of the partial identification information in the fifth embodiment of the present invention.

The data presentation device of this embodiment is constructed similar to the fourth embodiment, but the [besides a] process[ing] of performing the conversion $f(\cdot)$ [to] on the seed and obtaining the index T_i is added to the superimposed position specification circuit 15b.

The record medium manufacturing device and [an] operation of a data presentation device of this embodiment [constructed like this] will be explained.

First, the [information] seed is recorded in the record medium 4b as the identification information for the superimposed position specification information in place of the index T_i . When the disc is read by the presentation device [presented], this information seed is read first, and is converted by the predetermined conversion $f(\cdot)$ in the superimposed position specification circuit 15b to obtain the index T_i [of] into the information storage table 21.

The following processing is similar to the fourth embodiment.

As described above, since the record medium and the data presentation device according to [the] this embodiment of the present invention obtain the index by converting the seed, and otherwise has [besides] a similar configuration to the fourth embodiment [is provided], safety and concealment of the specified information at the superimposed position [can be] is further improved.

In the above-mentioned fourth and fifth embodiments, though the information storage table is stored [to] in the data presentation device, it is also possible to store the information storage table in the record medium. In this case, encoding is performed so that the information is made [as] accessible by a key.

(Sixth Embodiment)

In this embodiment, means for preventing the presentation output of [the] unauthorized copy data [by] using a method different from the second to the fifth embodiments will be explained.

FIG. 11 is a block diagram which shows an example of a main configuration of [the] a record medium manufacturing device according to the sixth embodiment of the present invention, and the same reference numerals are [is] attached to the same parts as in [of] FIG. 4 and so the explanation of these parts will be omitted.

This record medium manufacturing device is constructed similar to the second embodiment [besides] except that a scrambler 30 is provided.

The scrambler 30 scrambles the digital data [in which] and the identification information M is made [as] the key of the scramble[,], scrambler 30 outputs the scramble data 25, and delivers it to the error correction encoder 2.

[On the other hand,] FIG. 12 is a block diagram which shows an example of a main configuration of the data presentation device of this embodiment, and where the same reference numeral is attached to the same part [of] as in FIG. 5, [and] the explanation will be omitted.

This data presentation device is constructed similar to the second embodiment, [besides the] except that an unscrambler 31 is provided in place of the data output controller 12 and the identification information judgment circuit 14.

The unscrambler 31 unscrambles [and outputs a] scramble data 25 from demodulation/error correction decoder 11 [as a presentation data by] using the identi-

fication information M given from the identification information decoder 13. Unscrambler 31 outputs presentation data.

[An operation] Operation of the record medium manufacturing device and the data presentation device of this embodiment₁ constructed as mentioned above₁ will be explained.

In the manufacturing of the record medium 4b shown in FIG. 11, [a] similar processing is performed [to] as in the second embodiment [excluding a] except the processing by the scrambler 30. In the scrambler 30, the digital data 7 is scrambled by using the identification information M.

[On the other hand, in] In the presentation of record medium 4b shown in FIG. 12, the identification information M is read first by the identification information decoder 13₁ similar to what is done in the second embodiment.

This read identification information M is given to the unscrambler 31. The unscrambler 31 unscrambles the scramble data 25 from the demodulation/error correction decoder 11 [in which] using this identification information M [is made] as a key, and outputs [it] the unscrambled data as [a] presentation data.

Here, an unscramble cannot be correctly performed and the correct data is not presented when the correct identification information cannot be decoded [by the] because [such as] the presentation disc is a copied disc.

As described above, the record medium according to [the] this embodiment of the present invention scrambles the digital data 7 [in which] using the identification

information [is made] as a key beforehand. Otherwise, [besides] it has a similar configuration to the second embodiment. Therefore, [fair] unscrambled presentation data cannot be presented if the [scramble] unscrambling cannot be done because the [released to make this a] key, [by taking out] the identification information, [when data is presented] cannot be taken out. Thus, presentation of an unauthorized copy to the [presentation] target data can be prevented.

The record medium manufacturing device to manufacture the record medium of this embodiment can manufacture the record medium in which the digital data 7 is scrambled by providing scrambler 30, [besides] and otherwise it has a similar configuration to the second embodiment.

In addition, the data presentation device of this embodiment provides the unscrambler 31, [besides] and otherwise it has a similar configuration to the second embodiment and unscrambles the scramble data according to the identification information. Therefore, the scramble can be released by the identification information only [at time when] if data is [presented] read from the regular original record medium [in a case that] for the embodiment in which the digital data is scrambled. Therefore, [safety to an] prevention of unauthorized copying is [can be] improved.

Though [a case to apply] an example using the second embodiment in which a method of scrambling the digital data 7 in which the identification information M is made a key [to the second embodiment] is explained in this embodiment, an application of this embodiment is not limited [in] to this [case] example, but may be applied to any one of the first and third to fifth embodiments.

In [the] this embodiment, a case [that] where the digital data [is] was scrambled [is] was explained. [, the] The present invention is not limited to [the] this embodiment, and, for example, [a] data may be encoded [in place] instead of [the] scrambled. In [this] that case, the data is decoded instead of [the] unscrambled, and the identification information M becomes a [code] coding key and a decoding key.

The present invention is not limited to [each of] the above-mentioned embodiments, and can be variously transformed within the range of the scope of the present invention.

For example, a position to which the original data is stored in each embodiment is not especially specified[, the] . A DVD and CD have an area on which a control information [of] for the contents data is recorded and an area on which the contents data is recorded. As an example of the former, there is an area [etc.] where music track number etc. of the CD are described. The present invention may store [the] original data which includes the identification information in any one of both [of] or the above-mentioned areas.

Though, for example, each means is described in hardware, these can [be] all be achieved [even] by a software means. [That is] For example, the record medium manufacturing device and the data presentation device, etc. of the embodiment may comprise [the] computer hardware resources, [of] including a CPU and a memory, etc., [and may be achieved] which may implement each means of the identification information superimposition circuit and the identification information decoder, etc., for example by [of the] embodiment [by the] in a control program.

Therefore, techniques described [to] in the embodiments can be distributed [by] and stored [storing] in storage media of, for example, [the] magnetic discs (floppy disc and hard disc drive, etc.), optical discs (CD-ROM and DVD, etc.), and the semiconductor memories, etc. as a program (software means) which is executable by the computer and [transmitting] transmitted by [the] a communication medium. The program stored on the medium side includes [a setting] an initialization program which constructs the software means (including not only the execution program but also the table and the data structure) executed by the computer. The computer which achieves this device reads the program recorded in the storage medium, constructs the software means [with the situation by the setting] according to the settings of the initialization program, and executes the processing mentioned above by controlling [an] operation [by] according to this software means.

Additional advantages and modifications will readily occur to those skilled in the art. Therefore, the invention in its broader aspects is not limited to the specific details and representative embodiments shown and described herein. Accordingly, various modifications may be made without departing from the spirit or scope of the general inventive concept as defined by the appended claims and their equivalents.